

## **Design Standard Identification for Electrical Systems**

### **Purpose:**

This design standard has the purpose of creating a consistent application for the identification of electrical equipment and devices throughout the East Side Union High School District, therefore achieving a standard of quality for maintenance, reliability and operational efficiency throughout all renovation and new building projects.

### **Design Standard:**

All identification material and methods to meet the following requirements based on Code requirements and industry standard of care:

- Coordinate names, abbreviations and other designations with equipment specified in this or other Divisions of the Specification or identified by the District.
- Fasten labels to equipment in a secure and permanent manner.
- Mark underground utilities in conformance with APWA.
- Conform to requirements of the CEC, latest adopted version with amendments by local AHJs including warning labeling and identification on existing equipment.
- Furnish products listed by UL or other testing firm acceptable to AHJ.
- Where signs are to be applied to surfaces which require finish, install identification after completion of painting.

All engraved labels to meet the following requirements based on Code requirements and industry standard of care:

- Melamine plastic laminate, white with black core, 1/16-inch thick.
- Engravers standard letter style, minimum 3/16-inch high capital letters.
- Drill or punch labels for mechanical fastening except where adhesive mounting is necessary because of substrate. Use self tapping stainless steel screws.
- Dymo tape labels are not acceptable.
- Install an engraved label on each major unit of electrical equipment indicating both equipment name and circuit serving equipment (e.g. "EF-1, CKT. 2P1-1,3,5), including but not limited to the following items:
  - i) Disconnect switches, identify item of equipment controlled.
  - ii) Relays.
  - iii) Contactors.
  - iv) Time switches.
  - v) Override switches.
  - vi) Service disconnect and distribution switches, identify connected load.
  - vii) Branch circuit panelboards.

- viii) Central or master unit of each electrical system including communication/signal systems, unless the unit incorporates its own self-explanatory identification.
- Install engraved on the inside of flush panels, visible when door is opened. Install label on outside of surface panel.

All conductor numbers to meet the following requirements based on Code requirements and industry standard of care:

- Manufacturers standard vinyl-cloth self-adhesive cable and conductor markers of the wraparound type. Preprinted black numbers on yellow field.
- Apply markers on each conductor for power, control, signaling and communications circuits where wires of more than one circuit are present.
- Match conductor identification used in panelboards, shop drawings, contract documents and similar previously established identification for division 26 work.

All branch circuit schedules to meet the following requirements based on Code requirements and industry standard of care:

- Provide branch circuit identification schedules, typewritten, clearly filled out, to identify load connected to each circuit and location of load. Numbers to correspond to numbers assigned to each circuit breaker pole position.
- Provide two columns, odd numbers in left column, even numbers in right column, with 3-inch-wide line for typing connected load information.

All relay panel schedules to meet the following requirements based on Code requirements and industry standard of care:

- Provide typewritten schedule to identify the incoming circuit, the controlled load, and the controlling devices for each relay.

All identification for circuit breakers to meet the following requirements based on Code requirements and industry standard of care:

- Provide permanent identification number in or on panelboard dead-front adjacent to each circuit breaker pole position. Square D adhesive is approved, other adhesives by specific prior approval only.
- Horizontal centerline of engraved numbers to correspond with centerline of circuit breaker pole position.

Provide underground utility markers to meet the following requirements based on Code requirements and industry standard of care:

- Detectable plastic ribbon, 6-inch wide by 4 mil thick.

- Color code as recommended by APWA. Safety Red for electric power distribution. Safety Alert Orange for telephone, signal, data and cable TV.
- Imprint over entire length of ribbon in permanent black letters, the system description, selected from manufacturer's standard legend which most accurately identifies the subgrade system.
- Install continuous tape, 6 to 8 inches below finish grade, for each exterior underground raceway.
- Where multiple small lines are buried in a common trench and do not exceed an overall width of 16 inches, install a single marker. Over 16 inch width of lines, install multiple tapes not over 10 inches apart (edge to edge) over the entire group of lines.

### **Approved Manufacturers:**

- For Engraved Labels: Lamicoid
- For Conductor Numbers: Brady
- For Underground Utilities Ribbon: Allen Systems, Inc.

### **Substitutes Allowed:**

Yes, if performance and quality equivalency can be evidenced.

### **Associated Design Standards and Construction Specifications:**

- Division 22 Plumbing Design Standards
- Division 23 HVAC Design Standards
- Division 25 Integrated Automation Design Standards
- Division 26 Electrical Design Standards
- Division 27 Communications Design Standards
- Division 28 Electronic Safety and Security Design Standards

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